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City and County of San Francisco
Department of Public Health
101 Grove Street
San Francisco, CA 94102

Project Planning Guide

STATEWIDE MULTIDISCIPLINARY MOLECULAR BIOLOGY
ACQUIRED IMMUNE DEFICIENCY SYNDROME (AIDS) RESEARCH CENTER

May 29, 1987

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CAPITAL IMPROVEMENT BUDGET
BUDGET DATA SHEET

CITY AND COUNTY OF SAN FRANCISCO
ISSUE DATE: May 28, 1987

Project Title: AIDS Research Laboratory
Pathology Building Expansion
San Francisco General Hospital Medical Center

Cost Index ENR:4600

I. FUNDING SCHEDULE

Totals	<u>1986/1987</u>	<u>1987/1988</u>	<u>1988/1989</u>
500,000 P	500,000		
1,000,000 W	1,000,000		
10,500,000 C		10,500,000	
<u>2,000,000 E</u>			<u>2,000,000</u>
\$14,000,000 (Total Project)	\$1,500,000	\$10,500,000	\$2,000,000

II. FUNDING REFERENCES

Account No.
Source

III. <u>COSTS</u>	<u>1986/1987</u>	<u>1987/1988</u>	<u>1988/1989</u>	<u>TOTAL</u>	<u>%</u>
Site Clearance		250,000	250,000	250,000	2.0
Construction		9,480,000	9,480,000	9,480,000	79.0
Exterior Utilities		200,000	200,000	200,000	1.7
Site Development		70,000	70,000	70,000	0.6
Fees	930,000		930,000	930,000	7.8
A & E/PP & C	400,000		400,000	400,000	3.3
Surveys, tests, plans, specifications	<u>100,000</u>		<u>100,000</u>	<u>100,000</u>	<u>0.8</u>
SUBTOTAL	\$1,430,000	\$10,000,000	\$11,430,000	\$11,430,000	95.2
Contingency 5%	<u>70,000</u>	<u>500,000</u>	<u>570,000</u>	<u>570,000</u>	<u>4.8</u>
TOTAL PWC	\$1,500,000	\$10,500,000	\$12,000,000	\$12,000,000	100%
Group 2&3 Equipment (seeking alternative funding source)			<2,000,000>	<2,000,000>	
TOTAL PROJECT	<u>\$1,500,000</u>	<u>\$10,500,000</u>	<u>\$2,000,000</u>	<u>\$14,000,000</u>	

IV. FINANCING

	\$
State of California	12,000,000
Seeking alternative source	<u>2,000,000</u>
TOTAL	\$14,000,000

V. STATUS OF PROJECT: Preliminary Planning

Prepared By: Adamson Associates

CAPITAL IMPROVEMENT BUDGET
ANALYTICAL DATA SHEET

CITY AND COUNTY OF SAN FRANCISCO
ISSUE DATE: May 28, 1987

Project Title: AIDS Research Laboratory
Pathology Building Expansion
San Francisco General Hospital Medical Center

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VI. ANALYTICAL DATA

AREAS

ASF per PPG	16,600 ASF
OGSF	28,700 OGSF
Ratio (ASF Current - OGSF)	0.58 to 1.00

UNIT COSTS

Construction Cost per ASF	\$571.08/ASF
Construction Cost per OGSF	\$330.31/OGSF
Total P W C Cost per ASF	\$722.89/ASF
Total P W C Cost per OGSF	\$418.12/OGSF
Gr. 2&3 Equipment Cost per ASF	\$120.48/ASF

VII. CONSTRUCTION COST ANALYSIS

	COST	\$/ASF	\$/OGSF	REMARKS
Concrete & Structure	\$1,280,000	77.11	44.60	
Closing - in	1,300,000	78.31	45.30	
Finishing	1,070,000	64.46	37.28	Partitions, doors and finishes
Group I Equipment	<u>1,750,000</u>	<u>105.42</u>	<u>60.98</u>	
SUBTOTAL - Gen. Constr.	\$5,400,000	\$325.30	\$188.15	
HVAC	1,750,000	105.42	60.98	
Plumbing	730,000	43.98	25.44	
Electrical	900,000	54.22	31.36	
Elevators	330,000	19.88	11.50	
Fire Sprinklers	<u>120,000</u>	<u>7.23</u>	<u>4.18</u>	
BUILDING COST	\$9,230,000	\$556.02	\$321.60	
Additional Bldg. Costs	250,000	15.06	8.71	Seismic upgrade to existing building
TOTAL CONSTRUCTION COST	<u>\$9,480,000</u>	<u>\$571.08</u>	<u>\$330.31</u>	Same as Section III, Page 1

EXECUTIVE SUMMARY


The American medical community became aware of an unusual disorder that is now known as Acquired Immune Deficiency Syndrome, or AIDS, when it was first reported in the United States in mid-1981. As of March 1, 1987 over 31,000 clinical cases of AIDS were reported nationally, and nearly 7,000 in California alone. Most notably, the number of cases diagnosed per month is continuing to rise. The alarming growth in the number of cases of AIDS, combined with the high fatality rates and associated medical costs of AIDS victims, have elevated the subject of AIDS to the nation's top public health issue. As about one-fourth of the nation's AIDS cases reside in California, the State's Department of Health Services (DHS) also has denoted AIDS as a top priority.

AIDS is characterized by a defect in natural immunity against disease. AIDS virus infects predominately the white blood cell which is the building block of our immune system. Normal immune systems regularly ward off bacteria, viruses, and parasites. The AIDS virus interferes with the normal immune system. People who have AIDS are vulnerable to serious illnesses which are referred to as "opportunistic" infections. Typically the AIDS victim perishes after onset of an opportunistic disease. There is currently no effective treatment for patients with AIDS.

It is imperative that a focused basic research program be established to accelerate the development of an AIDS vaccine, and a method of killing existing AIDS virions as soon as possible. Because the AIDS virus is associated with extremely malignant forms of human disease, investigations on live-virus populations and on cells infected with these viruses require special biohazard containment, with a special animal facility (vivarium), also with biohazard containment features. A program of the proposed size, scope, and importance is not available or potentially available in currently existing laboratories in the State of California at this time.

Thus, this project proposes to construct a two-level addition to the existing three story Building 3 on the San Francisco General Hospital grounds intended to expand AIDS basic science research activities in the State of California. Approximately 16,600 assignable square feet will be required for laboratories, biohazard containment facility, equipment rooms, offices, vivarium and support services.

This project will be funded from State funds totalling \$12 million.



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STATEMENT OF THE PROBLEM

As the frontier of biomedical research has changed, so have the accompanying requirements for facilities. Scientists have developed the capabilities to totally tear apart the virus that are responsible for virulence (and, possibly, protective antibody production). This new science, called molecular biology, employs the technology of genetic engineering. The types of research protocols necessary to pursue the AIDS research goals require maximum security and isolation settings. The laboratories need to house computers and computer-driven research equipment like ultracentrifuges, gamma and beta counters. There is a clear need for investigative isotope facilities, shielded instrument area and laminar-flow and tissue culture hoods.

It should be emphasized that the understanding of all the features of the AIDS disease is still in its nascency and, as such, it is imperative that this Statewide Research Center at San Francisco General Hospital be established as soon as possible. While an incredible amount of knowledge has been accumulated during the last three years, there is currently no effective treatment for patients with AIDS. Additionally, even though AIDS-related vaccines are being developed, there is currently no evidence that these vaccines are likely to be efficacious in killing the virus intracellularly or selectively destroying those cells in which portions of the AIDS virus have been incorporated in the cell's genome.

If the spread of the virus is to be stopped and effective treatment of the infection developed, a unique vaccine capable of eliminating an intracellular virus must be developed, and new strategies must be found for killing virions already incorporated in the host's genetic material. The tools needed to conduct studies designed to address these issues exist, although the dedicated laboratory bench space is not currently available. Current research is scattered and scientists are competing for access to bench space, which is limited.

BACKGROUND

Molecular biology began about thirty years ago with the discovery of the structure of the genetic material deoxyribonucleic acid (DNA) by Watson and Crick. The structure itself explained many known aspects of genetics but posed important problems concerning DNA replication and also the means by which proteins were prescribed by DNA. Over the years, other research elucidated the basic mechanisms of DNA replication, involving more or less the simultaneous copying of both strands of the DNA with a complex of enzymes and associated proteins.

Within the past ten years, a second phase of molecular biology has begun. Unlimited quantities of both the nucleic acids (DNA and RNA) and proteins can now be produced.

Further research examining interplay between DNA-RNA-protein-antibody chemistry and biology has revolutionized the approach to the study of biology and the utilization of these technologies for clinical purposes such as:

- Production of traditional hormones like insulin and growth hormone, as well as new hormones such as interferon and one that controls blood pressure;
- Production of new vaccines which are safe and highly effective, such as the Hepatitis B virus vaccine;
- New diagnostic methods for detection of disease, including human cancers;
- Production of monoclonal antibodies that react with a virus and prevent the pathogenic activity of the virus; for example, a diarrhea that is frequently fatal in calves can be prevented by oral treatment with a monoclonal antibody against the virus; and
- Production of enzymes that can be used therapeutically to treat heart attacks by dissolving blood clots or conversely, to aid in blood clotting in the case of hemophilia.

Research in molecular biology has also led to the development of new preventative strategies of controlling disease. Vaccines have been used for nearly two hundred years to protect against disease, but they have been used only against epidemics because they have not been completely safe. Recombinant DNA methodologies will be crucial in producing safe, efficacious vaccines against all kinds of infectious diseases, including viruses, bacteria, protozoa and higher forms. The first vaccine to be developed using these strategies was against the Hepatitis B virus, a virus that affects nearly half the world's population and causes the world's most prevalent cancer, liver cancer. This is the forerunner of a new generation of vaccines for prevention against infectious disease.

DESCRIPTION OF THE PHYSICAL PROBLEM:

For leading scientists to begin working on the fundamental questions relating to the molecular analysis of the human immunodeficiency virus (HIV) and to develop a vaccine capable of mitigating its clinical manifestations, a state-of-the-art physical environment utilizing pioneering recombinant DNA technologies and other modern molecular genetics methods is clearly required. A state-of-the-art molecular/cell biology research facility containing the necessary equipment for the purpose of AIDS research currently does not exist, particularly with a significant number of leading researchers located in one site.

In a review of available laboratory space, including the San Francisco Department of Public Health facilities and the University of California - San Francisco campus, it seems abundantly clear that such research space currently is not available. A review of alternative sites at SFGH is included in the next section.

ARRIVING AT A SOLUTION

San Francisco General Hospital (SFGH) is uniquely qualified to develop the Statewide AIDS Research Center on its campus. A logical facility for expansion exists on the SFGH site. The Pathology Building, designed to accommodate five floors, currently contains only three. Completion of this structure would circumvent the need for a new building, providing approximately 16,600 ASF of laboratory space devoted to investigation of the AIDS disease. SFGH has a long, mutually beneficial bond with the University of California, San Francisco a leading medical research facility in the United States and the home of recognized pioneers in molecular biology - the scientific discipline that will be essential to solving the AIDS mysteries.

SFGH is already a leading AIDS clinical center with a nationally recognized reputation in clinical investigation and for the development of innovative models of care for AIDS patients. It will be beneficial in the long-term vaccines development to have the clinical research site in close proximity to the molecular biology research facility where the vaccine development will occur, SFGH is a rich scientific environment with an established record of accomplishments. It is the home of five organized basic research units and numerous other independent investigators. With a research budget of over \$15 million per year -obtained largely in national competition- it ranks as one of the leading City/County hospitals in the nation in biomedical research. Further, the AIDS programs at SFGH are enthusiastically supported by the Mayor, the Department of Public Health, and the entire City and County of San Francisco, as attested to by allocated funds of over \$5 million targeted for AIDS-related activities.

There are a number of AIDS-related research activities underway at San Francisco General Hospital, and the proposed Statewide AIDS Research Center will permit the expansion of these activities. Research at the Center would be able to draw on the expertise of, and collaborate with, the leading academic and industrial genetic engineers in the world, many of them working locally at Stanford University, which has been very supportive of this project, the University of California, San Francisco, and in the private biotechnology industry with firms such as Chiron and Genetech which have expressed a strong interest in collaborating with the proposed AIDS Research Center.

THE PROPOSED PROJECT

As part of the overall strategy to combat the current AIDS epidemic, the City and County of San Francisco Department of Public Health, submitted a proposal in September 1986 to the California State Department of Health Services, Office of AIDS, outlining a plan to develop a Multidisciplinary Molecular Biology AIDS Research Center. After consideration, the California State legislature approved the proposal and appropriated \$1.5 million in FY 86-87 to develop the project.

The primary objective of the proposed research facility will be to bring together an elite group of basic scientists from various disciplines including molecular biologists, virologists and neurologists, to accelerate the investigation of developing an AIDS vaccine and a method of killing existing AIDS virions.

The proposed Statewide Multidisciplinary Molecular Biology AIDS Research Center will be a facility to accomodate basic research components including but not limited to the following currently projected disciplines:

- 1) Molecular Virology Section
- 2) Cellular and Molecular Immonology Section
- 3) Viral Oncogenesis Section
- 4) Cellular and Molecular Neurovirology Section

In order to support these disciplines, the facility will contain:

a) Biohazard Containment (P-3), Flow Cytometry and Tissue Culture Units.

b) Vivarium

The proposed space allocation of approximately 16,600 assignable square feet will include common space, investigators' laboratories, office space, equipment rooms, tissue culture laboratories, computer rooms, receiving & storage, staff lounge and a vivarium initially planned along the parameters detailed in the following two pages.

STATEWIDE
AIDS RESEARCH CENTER
SPACE PROGRAM SUMMARY

		<u>Total</u> <u>Assignable</u> <u>Square Feet</u>
Laboratories		
9 Modules @ 660 asf		5,960
Office		
9 @ 120 asf		1,080
Common Equipment Rooms:		
Bacterial and Yeast Culture	250	
Isotope Lab	175	
Chemical Balance 2 @ 50 asf	100	
Immunofluorescent Microscope Room	50	
Equipment Rooms 2 @ 288	<u>575</u>	
		1,150
Tissue Culture Laboratories:		
2 @ 300 asf	600	
2 @ 150 asf	<u>300</u>	
		900
Cold Rooms		
2 @ 200 asf		400
Vivarium:		
Quarantine Area	240	
Isolation Room	60	
Office/Records	120	
Lockers/Changing Room	120	
Toilets 2 at 40 asf	80	
Animal Holding 3 at 120 asf	360	
Specific Pathogen Free Facility		
2 Holding Rooms at 120 asf	240	
Breeding Room	120	
Air Lock Entry and Shower	120	
Staging Area	120	
Clean Corridor	210	
Biosafety Level 2 Facility		
Holding Room	120	
Air Lock Entry	80	
Procedure	120	
Cagewashing Room	460	
Food Storage	60	
Bedding Storage	60	
Housekeeping	<u>60</u>	
		2,750

STATEWIDE
AIDS RESEARCH CENTER
SPACE PROGRAM SUMMARY
(Cont'd Page 2)

Total
Assignable
Square Feet

Biosafety Level 3 Facility (P-3):

Tissue Culture Lab	900	
Equipment Room	275	
Cold Room	80	
Cell Sorter Lab	180	
Immunofluorescent Microscope Room	35	
Changing and Shower	100	
Air Lock Entry	50	
Staging	80	
Circulation	<u>100</u>	1,800
Glasswashing Room		300
Media Preparation		350
Darkrooms:		
1 @ 90 asf	90	
1 @ 40 asf	<u>40</u>	130
Administrative Support:		
Clerical	150	
Director's Secretary	120	
Copy/Mail	<u>80</u>	350
Conference/Library		500
Computer Rooms:		
1 @ 150	150	
1 @ 50	<u>50</u>	200
Lounge		150
Receiving/Storage		<u>600</u>
<u>TOTAL</u> Assigned Square Feet		<u>16,600</u>
<u>TOTAL</u> Gross Square Feet		<u>28,700</u>

DESCRIPTION

The Pathology Building (Building 3) at San Francisco General Hospital was built 20 years ago to house the Pathology service, an auditorium, and the vivarium (for experimental animals at SFGH). The building is located in close proximity to the other four buildings at SFGH that are devoted to medical research pertinent to improving health care. Only three floors of Building 3 were originally constructed, although the building was designed to accomodate an additional two floors.

As the programming consultants developed the project scope, they identified the need for 16,600 ASF for the AIDS laboratory requirements. It became necessary for the additional floors to project beyond the original building to meet the increased area identified in the program. The preliminary structural analysis indicated that most of the lateral bracing required in the current building code can be accomodated in the elements supporting this projection. (See Site Plan and Section Page 16).

A mechanical floor was considered a design benefit to preserve the existing roof area and to house the existing and the additional mechanical equipment necessary to support the new facility. This allows maximum compatability for efficient planning of the new addition, while minimizing the disruption and interference with existing building operations during construction. It also provides a useful transition zone to redirect the horizontal routing of waste lines and exhaust ducts.

Construction Requirements:

This laboratory is much more intensive than an academic setting might provide. As there are no classroom or other administrative space to dilute the more expensive bench space, the costs per square foot are somewhat higher. Included in the cost estimates are: the need to reinforce the existing structure to meet current building codes; higher HVAC costs due to the specialized air handling needs that the laboratory, vivarium, and P-3 facility require; and the specialized fume hoods, equipment, stainless steel casework and cages associated with this type of laboratory. There is currently one hydraulic elevator serving Building 3, and an additional shaft space for a second elevator. The current elevator will be extended, and a second elevator will be added to serve the new facility.

In review of existing building opportunities at the SFGH campus, only one alternate site with potential for new construction was identified, which was a parking lot adjoining the current Building 3. The cost and planning implications of building on this alternate site were analyzed, and compared with cost and benefits of the addition to Building 3. Several factors weighed against the alternative site for construction, including:

- * The requirement by City Planning Codes to mitigate removal of parking availability, i.e., the need to construct replacement parking in the basement of the building to mitigate the loss of parking at the site, which would add prohibitive costs to the project.

- * The current SFGH campus space plans include expansion of ambulatory care facilities into this alternative space based on the current indigent care demands and projection for future AIDS amulatory care.
- * The cost of new construction for this intensive laboratory space is greater than the cost of adding two floors to the existing structure.

SUMMARY OF PROJECT BENEFITS

The purpose of the Statewide AIDS Research Program will be to draw from the various disciplines basic scientists whose aims are as follows:

- 1) Develop a vaccine for AIDS by identifying proteins of the virus that are antigenic and that induce the production of antibodies that are neutralizing in vitro and protective in vivo;
- 2) Determine how the AIDS retrovirus and other associated viruses lead to malignancy in patients infected with the AIDS virus;
- 3) Unravel the mechanisms by which the AIDS virus produces its destruction of the immune system;
- 4) Determine the extent and mechanism by which the AIDS virus causes disease in the nervous system; and
- 5) Render support to the multiple clinical trials of currently available methods of treatment that are in progress at SFGH and the University of California, San Francisco by providing virus isolation, drug pharmacokinetic studies, and assays of responses in the immune system.

This program will be an integral part of the consolidated and coordinated AIDS-related activities in California. The interaction between these committed scientists and the physicians who are directly responsible for the care of patients will bring about the best available care for patients with AIDS, and will enhance the efforts to find an early means to control this tragic epidemic.

PROJECT FUNDING STATEMENT

This project will be funded from State funds for planning, design and construction, totaling \$12 million, in fiscal years 1986-87 and 1987-88, according to the schedule shown below.

<u>1986-87</u>	<u>1987-88</u>	<u>Total</u>
		(ENR-5/88)
\$1,500,000	\$10,500,000	<u>\$12,000,000</u>

Funding of \$2,000,000 for Group 2 and 3 equipment will be pursued by the City and County of San Francisco from alternate sources.

CITY AND COUNTY OF SAN FRANCISCO

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Campus: San Francisco General Hospital Project Account No. _____Project Title: Statewide Multidisciplinary Acquired Immune Deficiency Syndrome (AIDS) Research CenterI. EXEMPT FROM THE CALIFORNIA ENVIRONMENTAL QUALITY ACT OF 1970

It can be seen with certainty that there is no possibility the project may have a significant effect on the environment as defined by the above procedures. The project is classified as exempt from the California Environmental Quality Act of 1970.

II. CATEGORICALLY EXEMPT

This project falls under the indicated Class of Exemption and there is no significant effect on the environment:

- | | |
|--|--|
| <input type="checkbox"/> Class 1: Existing Facilities | <input type="checkbox"/> Class 11: Minor Additions to Schools |
| <input type="checkbox"/> Class 2: Replacement or Reconstruction | <input type="checkbox"/> Class 12: Transfer of Ownership of Land order to Create Parks |
| <input type="checkbox"/> Class 3: New Construction Small Structures | <input type="checkbox"/> Class 13: Open Space Contracts |
| <input type="checkbox"/> Class 4: Minor Alterations to Land | <input type="checkbox"/> Class 14: Educational Programs |
| <input type="checkbox"/> Class 5: Alteration in Land Use Limitations | <input type="checkbox"/> Class 15: Normal Operation |
| <input type="checkbox"/> Class 6: Information Collection | <input type="checkbox"/> Class 16: Acquisition Housing for Housing Assistance |
| <input type="checkbox"/> Class 7: Inspection | <input type="checkbox"/> Class 17: Leasing New Facilities |
| <input type="checkbox"/> Class 8: Loans | <input type="checkbox"/> Class 18: Cogeneration Projects |
| <input type="checkbox"/> Class 9: Accessory Structures | |
| <input type="checkbox"/> Class 10: Acquisition for Conservation | |

X III. INITIAL STUDY

This project is not Exempt from CEQA or Categorically Exempt; an Initial Study is to be prepared to determine if the project may have a significant effect on the environment.

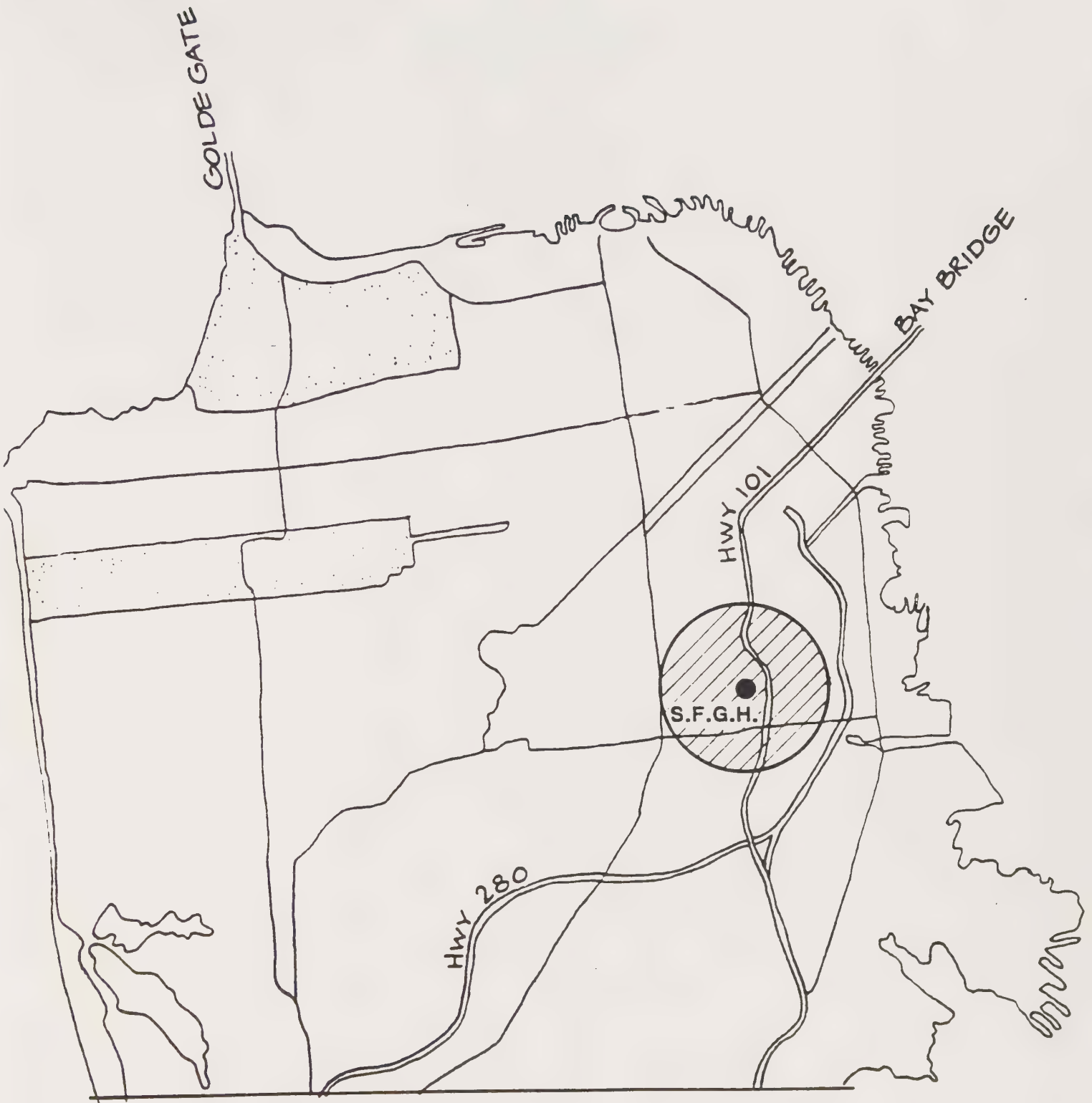
1. Checklist _____ Narrative _____

IV. ENVIRONMENTAL IMPACT REPORT (EIR)

It is known that the project will have a significant effect on the environment.

PROJECT DESCRIPTION:

The proposed project will design and construct a two-level addition to the existing three story Building 3 on the San Francisco General Hospital grounds. Approximately 16,600 assignable square feet will be required for laboratories, biohazard containment facility, equipment rooms, vivarium, offices and support services.



Job Name

MULTI-D AIDS
RESEARCH CENTER

Title

LOCATION MAP

No.

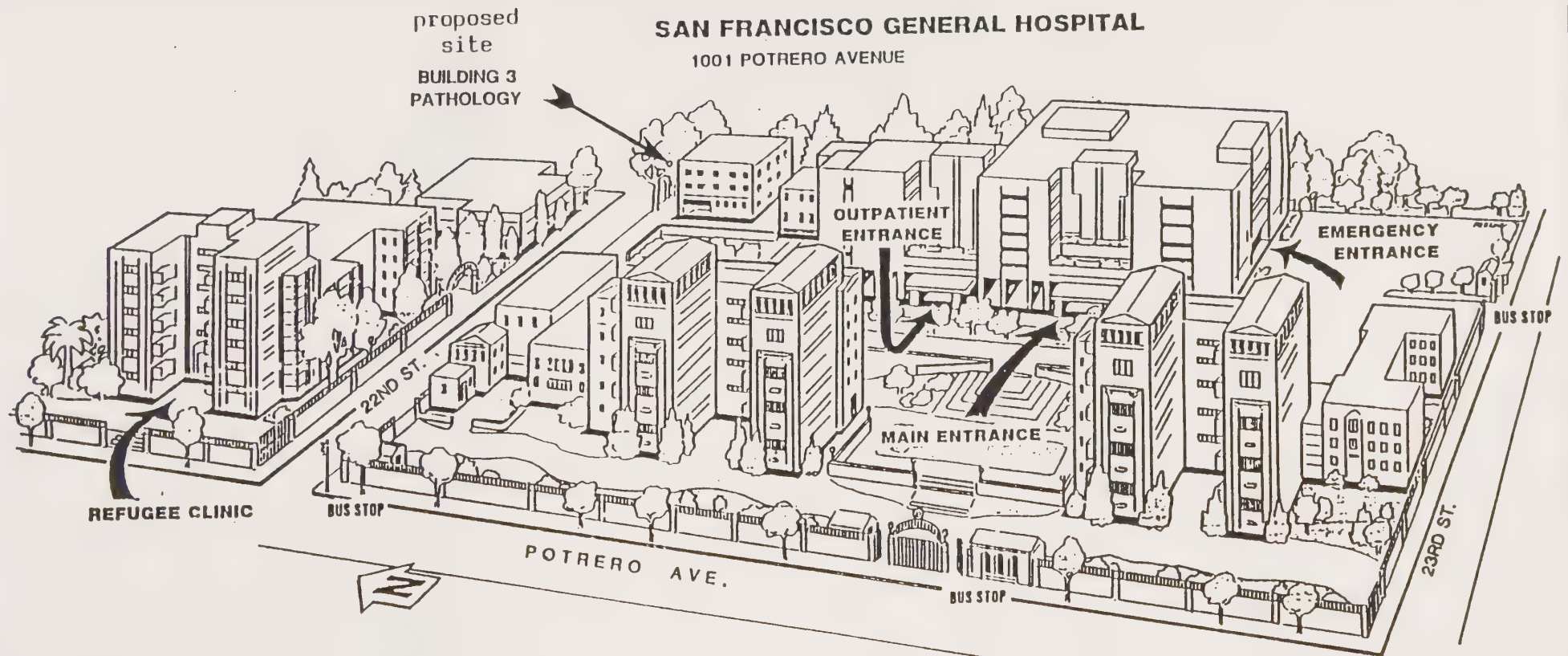
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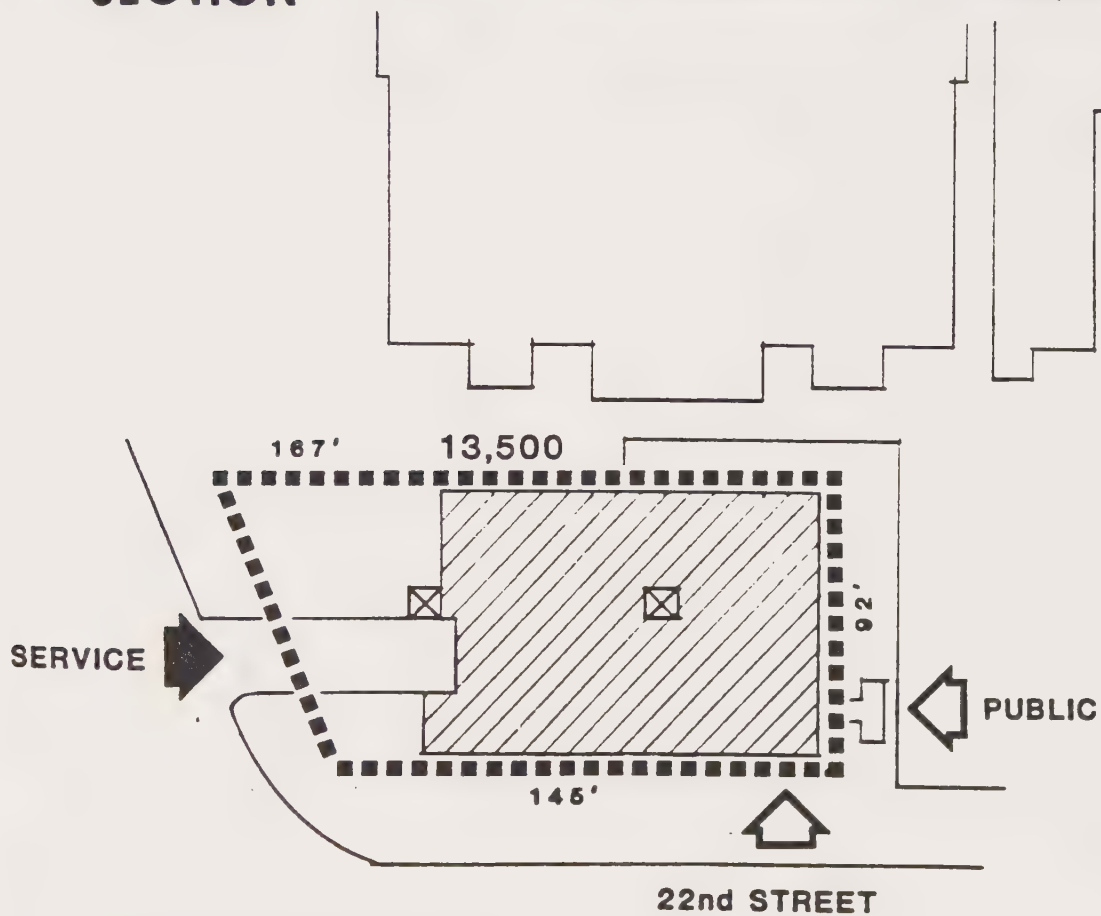
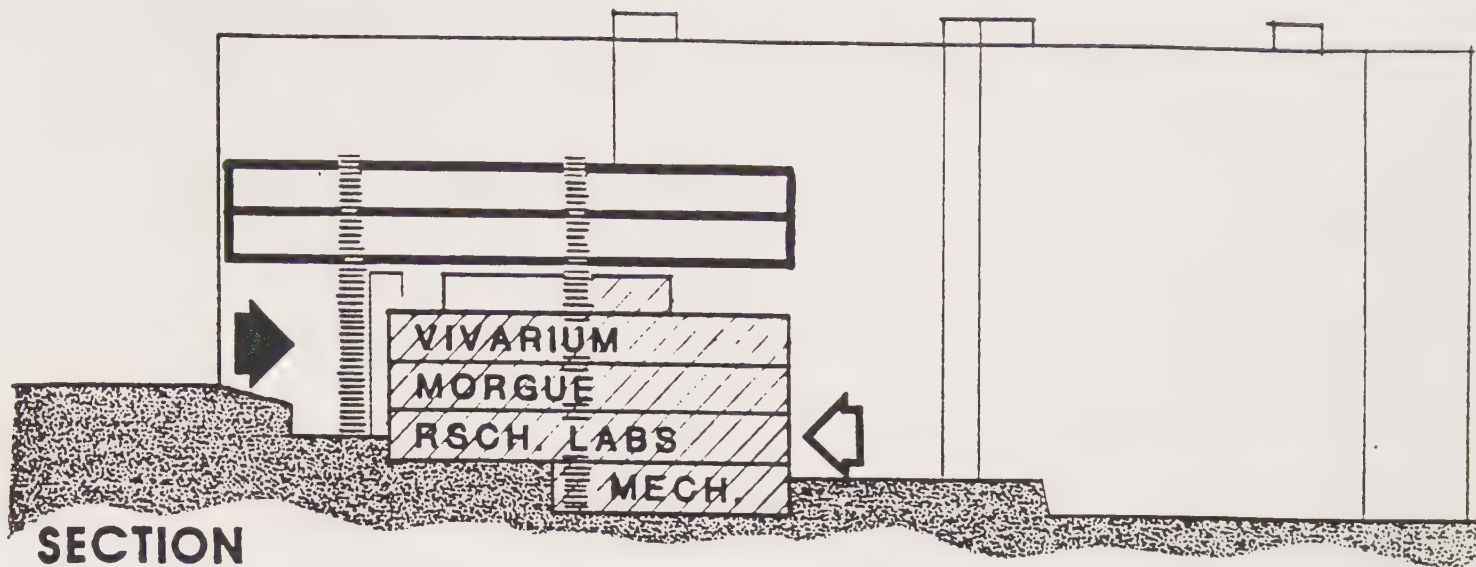
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Job Name

MULTI-D AIDS
RESEARCH CENTER

Title

SITE PLAN & SECTION

Scale

No.

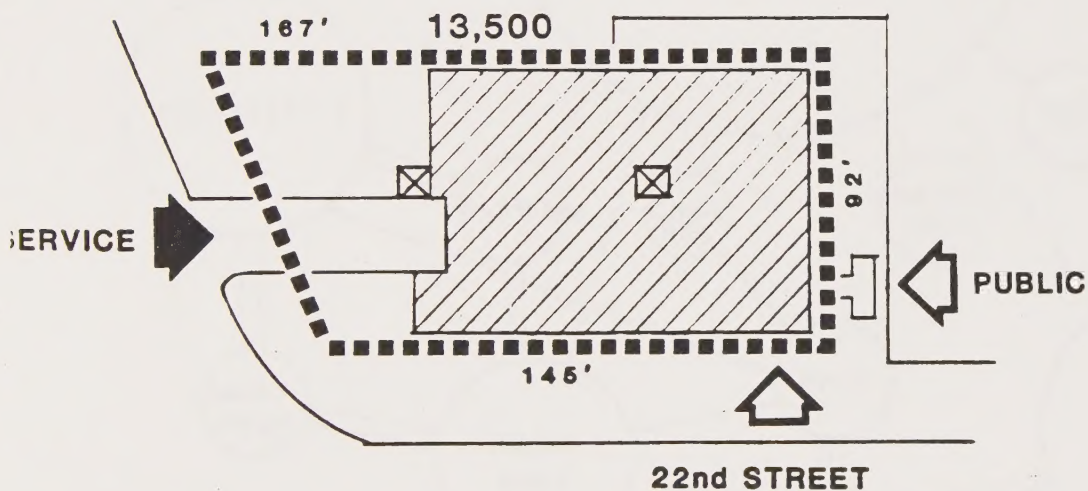
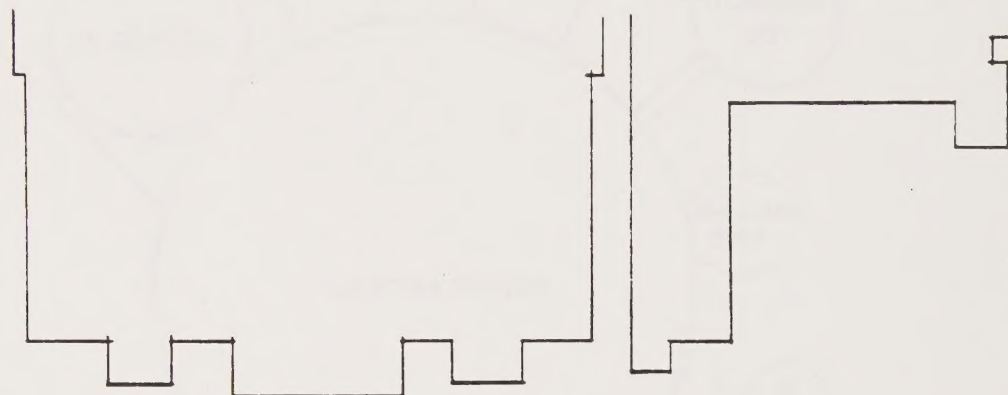
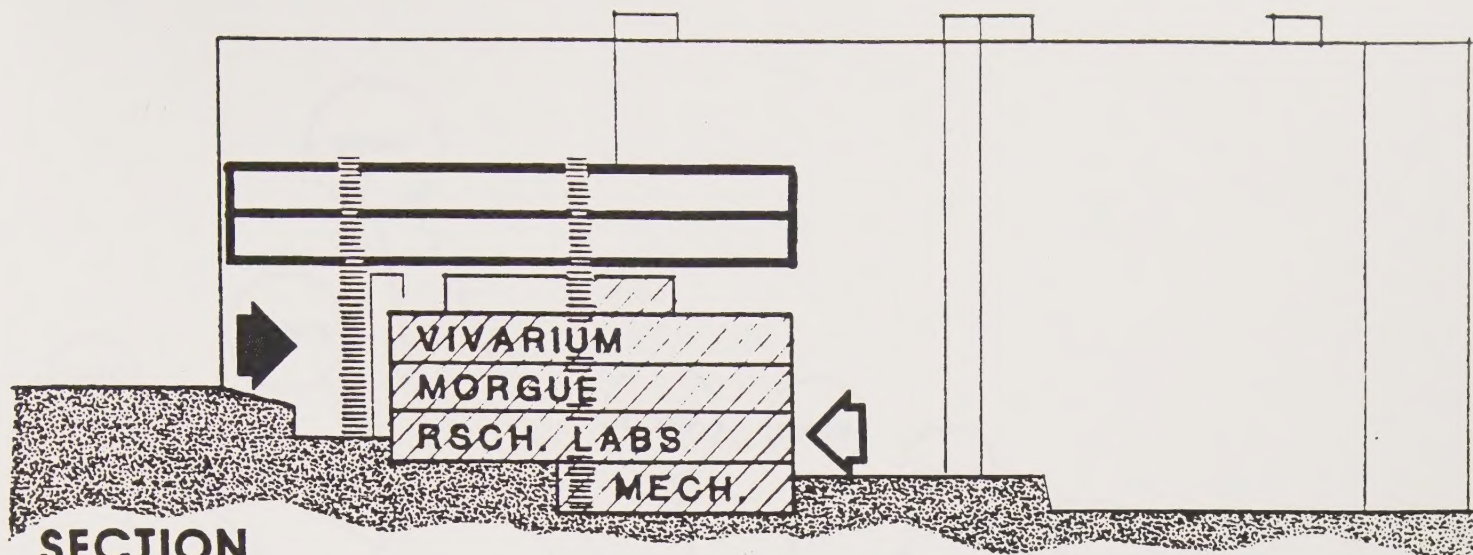
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Date

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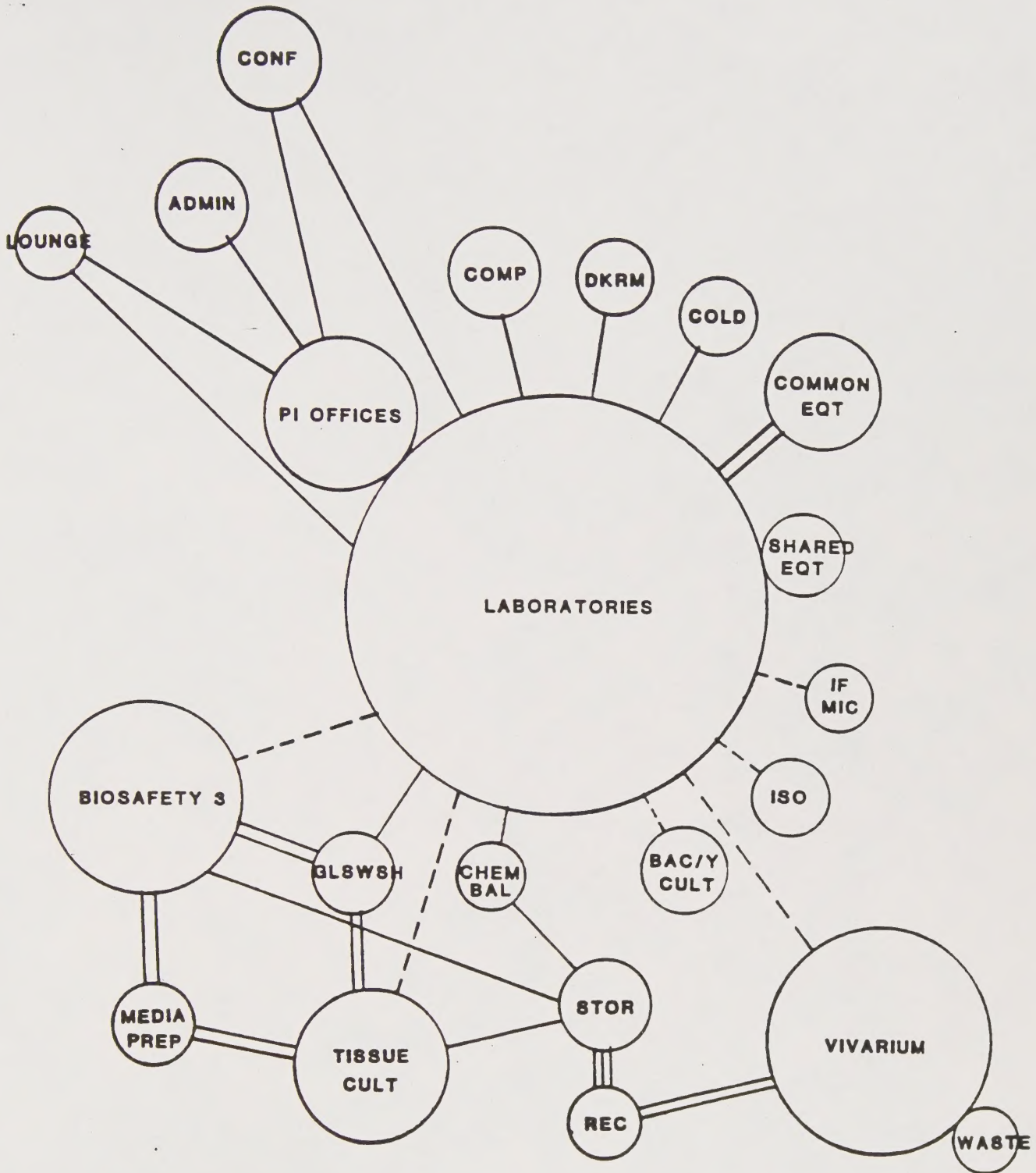


PROPOSED PLAN

Job Name
MULTI-D AIDS
RESEARCH CENTER

Title
SITE PLAN & SECTION
Scale

Job No.
1196/0085.00 MCFILLAN & COPENHAGEN Planners & Archt



Job Name MULTI-D AIDS RESEARCH CENTER	Title FUNCTIONAL RELATIONSHIPS	No.
Job No. 19616085-00	Scale MCIELLAN & COPENHAGEN Planners & Architects	Date 5-27-87



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